## REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1, 3 – 6 and 8 - 22 are pending in the present application. Claims 1, 5, 8, 13, 17 and 21 are independent claims. By this response, claims 8 and 9 are amended.

### Allowed Subject Matter

Applicants thank the Examiner for noting that claims 1, 3 – 6, and 17 - 22 are allowed as written. Applicants wish to pursue the patentability of all claims at this time, however.

### Claim Rejections – 35 U.S.C. §101

Claims 13 – 16 stand rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. Specifically, the claims are rejected as failing the "machine-or-transformation" test as recently clarified by the Federal Circuit in *In re Bilski,* 545 F.3d 943 (2008). Insofar as it pertains to the presently pending claims, this rejection is respectfully traversed.

#### Independent Claim 13

Independent claim 13 pertains to a method for indentifying potential targets from image data, the method comprising, in pertinent part, "receiving as input data, a plurality of time frames of data from at least one sensor."

In making this rejection, the Examiner notes that not every step of the claimed method is tied to a specific machine. Only the step of "receiving" involves a specific machine (a sensor)

whereas the other steps do not. Applicants respectfully submit that the Examiner incorrectly interprets the holding of *Bilski* in applying this rationale.

Applicants respectfully submit that the *Bilski* court specifically discusses the connection of a process claim <u>as a whole</u> to a machine or transformation. As noted in *Bilski*, "the Court has made clear that it is inappropriate to determine the patent-eligibility of a claim as a whole based on whether selected limitations constitute patent-eligible subject matter. ... Thus, it is irrelevant that any individual step or limitation of such processes by itself would be unpatentable under § 101." *In re Bilski* at 958.

The court also noted that "a claim that purportedly lacks any physical steps but is still tied to a machine or achieves an eligible transformation passes muster under § 101," *In re Bilski* at 961, thereby specifically dismissing as invalid a rationale that requires each step of a process claim to satisfy the machine-or-transformation test. A process claim that is tied to a machine is therefore directed to patentable subject matter regardless of how many of the claimed steps recite an explicit connection to a particular machine.

Applicants respectfully submit, in view of the above-cited *Bilski* opinion, that independent claim 13 satisfies the "machine" requirement of the "machine-or-transformation" test. The method of independent claim 13 specifically requires multiple time frames of data from at least one sensor. Independent claim 13 is therefore clearly and strongly tied to at least one sensor, thereby satisfying the "machine" aspect of the "machine-or-transformation" test because the "receiving" portion of the method requires "at least one sensor," which is a specific machine.

<u>Claims 14 – 16</u>

Applicants respectfully submit that claims 14 – 16 are allowable at least by virtue of their

dependency from independent claim 13.

<u>Summary</u>

At least for the reasons set forth above, Applicants respectfully submit that claims 13 –

16 meet the requirements of 35 U.S.C. §101. Accordingly, reconsideration and withdrawal of

this rejection is respectfully requested.

## **<u>Claim Rejections under 35 U.S.C. §102</u>**

Claims 8 – 12 stand rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent

4,926,452 to Baker ("Baker"). Insofar as it pertains to the presently pending claims, this

rejection is respectfully traversed.

<u>Claim 8</u>

Independent claim 8 pertains to "a device to identify potential targets from at least two

frames of image data generated by at least one imaging sensor and representative of a scene,

comprising: a fusion module configured to perform at least one of a temporal fusion and a spatial

fusion of the generated frames of image data; and a threshold module configured to apply

thresholding techniques on the fused image data, wherein the temporal fusion includes

temporally fusing the frames of image data across a plurality of time frames and the at least two

frames of image data are from the same sensor; and the spatial fusion includes fusing the frames of image data across a single time frame and the at least two frames of image data are from different sensors."

## Prior Art

Baker teaches an automated laminography system for inspecting electronics (Abstract). Baker specifically teaches an x-ray video camera that integrates images for three time frames during an inspection imaging cycle (Col. 23, lines 28 – 35).

## Baker's Integrating Is Not Fusion

Applicants respectfully submit that Baker's teaching of integrating images for three time frames relates to the generation of frames of image data and not to the subsequent temporal fusion thereof. Baker's use of the word "integrate" relates to the creation of image data, not the temporal integration of it. What Baker specifically means in stating that "the camera begins to integrate the image for three frames" (Col. 23, lines 34 – 35) is that image data is generated from the camera at the frame rate of the imaging sensor in the camera. Baker specifically discloses that one frame time is the time required for the camera to transmit a frame of image data. Baker also discloses, however, that three frame times are required for one complete revolution of the x-ray source and the turntable to complete a full revolution (Col. 23, lines 35 – 37). Therefore three time frames are allocated for image generation. Furthermore, Baker's statement that "the camera begins to integrate the image for three time frames," (Col. 23, lines 34 – 35) relates to an

exposure time setting, not a generation of multiple image data frames. Baker uses three time frames, i.e. three consecutive clock cycles, to generate a single frame of image data.

Baker specifically states that "the image is grabbed from the camera and sent to one of the image analysis computers" after it is captured by the camera (Col. 23, lines 39 – 40). Baker therefore generates frames of image data with the camera, and those frames of image data subsequently processed by downstream analysis computers. Applicants therefore respectfully submit that in using the phrase "the camera begins to integrate the image for three time frames," (Col. 23, lines 34 – 35) Baker merely refers to the process of generating the image data and not to any spatial or temporal fusion thereof.

### Baker Has No Fusion Module

Applicants respectfully submit that although Baker may teach or suggest "at least two frames of image data generated by at least one imaging sensor and representative of a scene," Baker fails to teach or suggest either temporal or spatial fusion of image data frames. By stating that "the camera begins to integrate the image for three frames" (Col. 23, lines 34 – 35), Baker clearly refers to the generation of a single frame of image data at 1/3 the frame rate of the camera / sensor. Extending integration time such that image data is produced at less than the frame rate of a camera is neither temporal nor spatial fusion.

Roughly speaking, temporal fusion is the combination of frames of image data from disparate time frames and spatial fusion is the combination of frames of image data from disparate sensors. Baker's teaching of integrating for three time frames, by contrast, relates to

the image integration time on a device such as an FPA, APS (active-pixel sensor) or CCD (charge-coupled device) prior to read-out. Baker's integration time is therefore an exposure setting related to the generation of a single frame of image data, not a fusion of multiple frames of image data.

To illustrate the above point more clearly, consider capturing image data during a fireworks display. Capturing image data at a camera frame rate and temporally integrating post-capture, information about events in each specific time-frame are preserved. The image from time frame 1 shows a launch, the image from time frame 2 shows the airburst, and the image from time frame 3 shows the firework fading in the sky. Integrating these three frames of image data nonetheless preserves the information about the firework launch and airburst sequence. Baker's approach would only have one image across all three time frames, and that image would have no information as to the relative timing of the launch, airburst, and fade.

Baker's extended integration time also carries inherent problems of over-exposure (bright objects will appear over-bright and wash out other image data) that are addressed by integrating multiple frames of image data post-capture as per the present invention. Baker's single image would also likely only show the firework airburst as that is the brightest event in that time period. Image data relating to the fading of the airburst would be completely lost under Baker's extended exposure time, but preserved under a temporal fusion approach. Baker therefore makes no teaching or suggestion of "a fusion module configured to perform at least one of a temporal fusion and a spatial fusion of the generated frames of image data" as required by independent claim 8 and all claims depending therefrom.

Claims 9 – 12

Applicants respectfully submit that Baker is deficient in its teaching with respect to claims 9 – 12 for at least the same reasons at set forth with respect to independent claim 8. Specifically, Applicants respectfully submit that claims 9 – 12 are allowable at least by virtue of their dependency from independent claim 8.

Summary

Applicants therefore respectfully submit that Baker is deficient in its teaching with respect to independent claim 8 and all claims depending therefrom. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.
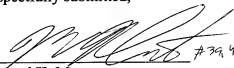
**Conclusion**

Since the remaining patents cited by the Examiner have not been utilized to reject the claims, but to merely show the state of the art, no comment need be made with respect thereto.

In view of the above amendment, applicant believes the pending application is in condition for allowance. Thus, the Examiner is respectfully requested to reconsider the outstanding rejections and issue a Notice of Allowance in the present application.

However, should the Examiner believe that any outstanding matters remain in the present application, the Examiner is requested to contact Applicants' representative, Naphtali Matlis (Reg. No. 61,592) at the telephone number of the undersigned in order to discuss the application and expedite prosecution.

Dated:  December 17, 2009                         Respectfully submitted,

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